

SEPTEMBER 1957

data

GOVERNMENT RESEARCH AND DEVELOPMENT DIGEST

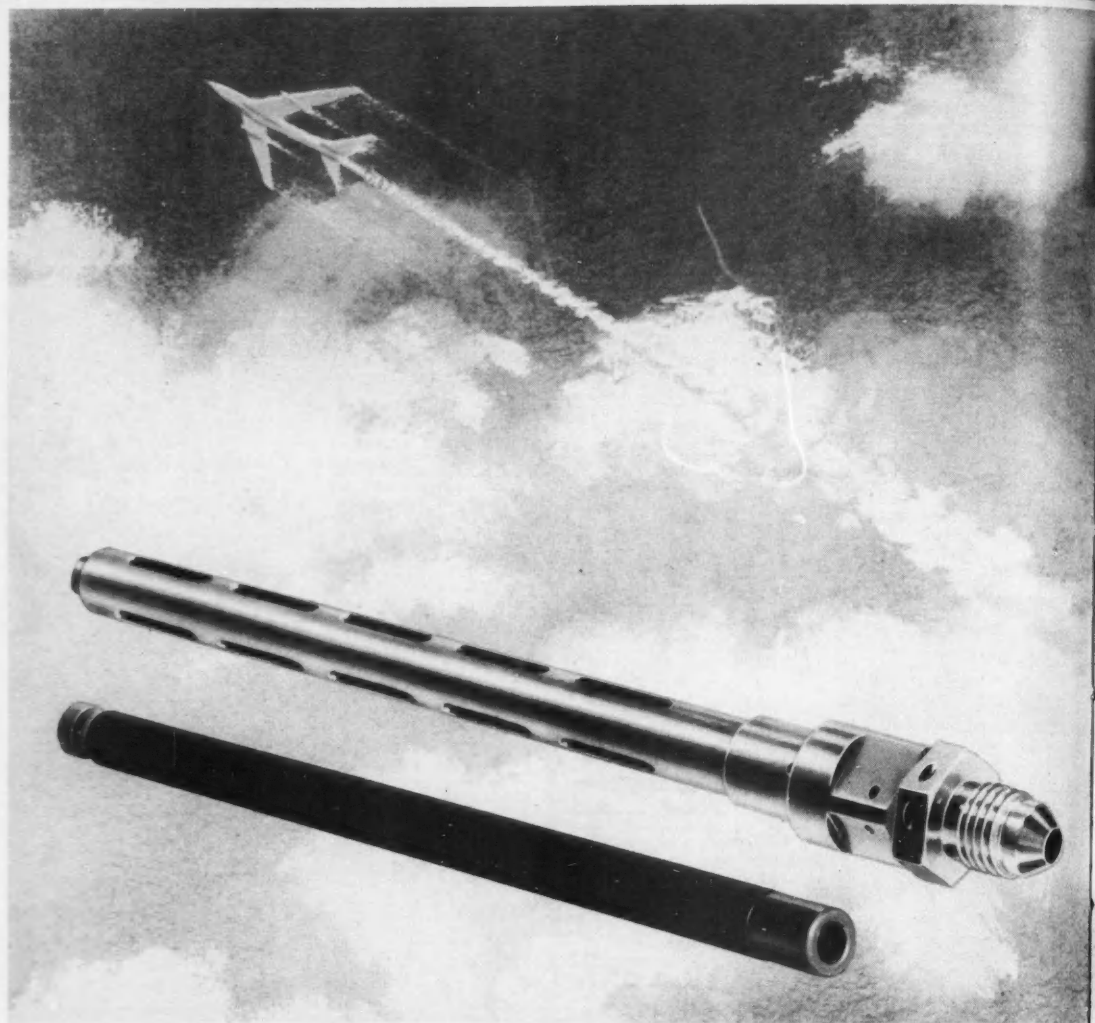
VOL. 2, NO. 9



Convair F-102 DAGGER

In this issue . . .

DATA FIRST ANNIVERSARY EDITION



"FEVER THERMOMETER" for supersonic jets

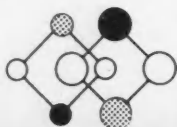
In order to break sound barriers, jet engines must break some temperature barriers, too—which brings some real problems in material selection. Any thermostatic control in the jet stream must withstand temperatures of 2000° without significant change in properties and characteristics.

Faced with this problem, one of the world's leading designers and manufacturers of aircraft components and systems has made Kennametal* a "Partner in Progress"—and has found an answer. For a vital part of the sensing element in a thermostat assembly, a small tube of Kentanium* is used. This material, one

of a big family of unusual carbides developed by Kennametal, retains its responsiveness and reliability through the entire flaming range of operating temperatures.

Perhaps you have some new product in mind that is still on the drawing board for want of materials with the necessary properties to meet an unusual operating condition. If you need superior corrosion or erosion resistance, hardness, strength and stiffness, or resistance to elevated temperatures, chances are you can find the needed combination of properties in the Kennametal line. Just write, outlining your specific problem. KENNAMETAL INC., Dept. DT, Latrobe, Pennsylvania

*Kentanium and Kennametal are the trademarks of a series of hard carbide alloys of tungsten, tungsten-titanium and tantalum.



INDUSTRY AND
KENNAMETAL
...Partners in Progress

data

Contents

September 1957 Vol. 2, No. 9

DATA PUBLICATIONS

Dupont Circle Building
1346 Connecticut Avenue, N. W.
Washington 6, D. C.

Phone HUDson 3-9450

STAFF:

Editor - Murray Queen Smith
Associate Editor - Bernard Katz
Features - Martin Caidin
Publisher - J. S. Smith

MILITARY CONSULTANTS:

Brig. General James J. Keating, USMC(Ret)
Colonel Joseph H. Kusner, USAFR

NEW YORK REPRESENTATION

George T. Hopewell, Inc.
101 Park Avenue
New York 17, New York
LExington 2-3783

MID-WEST REPRESENTATION:

Joseph S. Smith
Queensmith Publishing Company
4 South Genesee Street
Waukegan, Illinois
Phone - Ontario 2-7398

WEST COAST REPRESENTATION

Justin Hannon
635 S. Kenmore
Los Angeles 5, California
Phone AXminister 2-9501

DATA is designed to give readers a quick scan of the latest developments in the military services and government agencies on a wide range of topics. Additional information on DATA articles, when available will be furnished on request to subscribers. Unless otherwise notified within the article, send your request for further information to DATA, Dupont Circle Building, 1346 Connecticut Avenue, N.W., Washington 6, D.C.

Material in this issue may be reproduced without request. Please credit DATA.

SUBSCRIPTION RATES:

U.S.-\$12.00 for 1 year; \$22.00 for 2 years.
Foreign-\$15.00 for 1 year; \$28.00 for 2 years.
Available to Government personnel through Federal Supply System, FSS Stock Requisition Number 7630-148, Index No. 1256, FSS Section 76, Page 90.

Checks may be made payable to DATA.

Published Monthly. Second-class mailing privileges authorized at Washington, D. C.

Title registered United States Patent Office

EDITOR'S MESSAGE	9-4	
LETTERS FROM READERS	9-5	
DATA BRIEFINGS	9-8	
OPERATIONAL REQUIREMENTS	9-10	
DOD DIRECTIVE 7800.5 OF 8/10/57	9-13	
AIR & SPACE	9-15	
Adaptable Jet Trainer		419
Hot Missile, FALCON		420
Army Aircraft, Key to Mobility		421
North American Has Turbojet Utility Plane		422
Cut SEAMASTERS to 24		423
Unidirectional Runways Studied		424
Lockheed P2V Preheating Improved		425
Storms Radared up to 50 Miles		426
B-58 May Carry Powerplant in Belly Pod		427
STRATOSCOPE Project Shoots at Sun		428
Blimps Get Largest Radar Antennas		429
Anticollision Mirror by CAA		430
COMMUNICATIONS/ELECTRONICS	9-20	
IGY Calls Out High Reliance on Electronics		431
Irrigation Needs Told by Electricity		432
Raytheon Spacistor May Meet Great Hopes		433
Photographic Mapping Radar Developed		434
Shortcut for Printed Experimental Wiring Boards		435
Soviets Plan Huge Power Systems		436
Motorola Man Hails Transistors		437
Philco Electronic Triggering Device for Radar		438
Air Force Has Improved Radar Altimeter		439
CONSTRUCTION	9-22	
Navy's Acoustic and Pressure Range Building		440
Polar Excavating		441
Dune Sand Compaction Faced in Spain		442
ENERGY	9-23	
New Gas Engines Cut Maintenance		443
Neutron Calibration Service		444
AEC Patents Released to Public		445
Tiny Turbine Aircraft Engine for 'Copters		446
LOGISTICS & MATERIALS	9-24	
Niobium Being Studied for Heat Resistance		447
Heat of Combustion Measurements Improved		448
Better Antiwear Steam Turbine Oil Needed		449
CAA Sets New Taxiway Standards		450
Supply and Service Administration Urged		451
No-Melt Missile		452
Antarctic Supply Scheduled	9-26	453
MEDICAL NEWS	9-26	
Kill the Chill with Pills		454
ONR Studies Blood Storage		455
Personnel Warned on Radar Radiation		456
Lower Prices Set by AEC on Cobalt 60		457
ORDNANCE	9-27	
Bonn to Rely on Allies for Major Ordnance		458
High Speed 30 mm Machine Gun		459
LACROSSE in Production		460
Swiss Missile Program		461
SHIPS	9-28	
Rough Seas Continue to Menace Hulls		462
Atomic Powered Merchant Ship in the Mill		463
Lightweight Army Neoprene Boat		464
Amber Flashes May Synchronize with Ship's Whistle		465
TRANSPORTATION	9-29	
Remote-Controlled Tractor Being Tested		466
Mechanical Mule Contracts Let		467
Army to Increase Tire Recapping		468
CAIDIN'S CORNER	9-30	
MAGAZINE PREVIEWS & REVIEWS	9-32	
DEADLINE DATA	9-34	



editorial



The photo on the left shows Miss Anne White, DATA secretary, Peter Girard, Ryan VERTIJET test pilot and myself having a pre-DATA birthday celebration at the Pentagon a few weeks ago when the VTO visited the Department of Defense headquarters.

People in organizations like Ryan, DOD, Harvey Aluminum, Dept. of Commerce, Admiral, ARDC, Vascology-Ramet and AFOSR -- government and industry people -- have been good to us this past year. We couldn't have stayed in business if they hadn't. Lord knows the magazine still has a long way to go. I'll be the first to admit it. But when you start a magazine, as I started DATA, with \$300 separation pay and another \$127 from cashed out leave on the books, you have to do a lot of things yourself, and unfortunately, sometimes it looks it.

The wonderful thing seems to be that we have gotten the idea across of what we are trying to do. We wish to be a trading post of information between government and industry

executives . . . busy people who don't have time to read a lot, can't subscribe to all the Armed Forces pubs and the multitude of periodicals of the technical press. We seem to be succeeding in this endeavor. DOD has given us a Pentagon Press parking permit and accredited us, General Services Administration has given us a government contract and has listed DATA in the Federal Supply Schedule, important men in government and industry all over the world, have subscribed to DATA. There has been a steady increase in subscriptions and little by little an increase in advertising. We have a Washington office in a fine part of town and copies of DATA in the Library of Congress.

It was a rough first year, but the tree is starting to get stronger now. I want to thank all of you for your subscriptions and support. I realize the responsibility we have here to provide you with a good DATA service and you can bet we will do it. Thank you.

Murray Smith

Congratulations

data

M A G A Z I N E

THE GOETZ COMPANY, printers of DATA magazine, wish to take this opportunity to congratulate the editor and staff of DATA on their first business milestone. As printers of their publication we take pride in the part we have played in its growth. In addition to DATA, The Goetz Company reproduces other technical publications, documents and reports. We are well qualified in the fields of technical printing, Photostating, white printing and xerography, and do work accurately, speedily and economically.

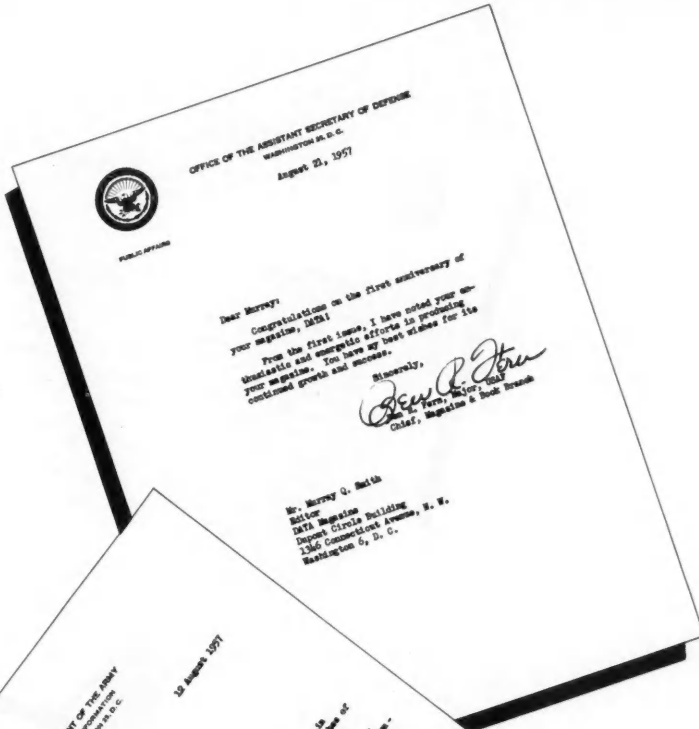
Security Problems?

THE GOETZ COMPANY would like to inform those government suppliers who deal with classified information and products that The Goetz Company maintains necessary SECURITY MEASURES and FEDERAL CLEARANCE to handle and reproduce classified material. We welcome your inquiries.

1030 20th St., N.W. Washington, D. C.

Phone Federal 7-1030

READERS REPORT





DEPARTMENT OF THE NAVY
BUREAU OF AERONAUTICS
WASHINGTON 25, D. C.

AS SUPPLY ORDER NO
Aer-107/6

15 AUG 1957

Mr. Murray Smith
Editor of Data Magazine
1346 Connecticut Avenue, N. W.
Washington 6, D. C.

Dear Mr. Smith:

Congratulations on your first anniversary of DATA which, incidentally, coincides with the first anniversary of our Aeronics Division, Bureau of Aeronautics.

DATA has been read with interest by our personnel, in view of the timeliness of the information and ease of reading. DATA provides a service in furnishing busy personnel thumbnail descriptions of important events.

I am sure we can look forward to seeing many more interesting and informative issues in the future.

Sincerely yours,

W. E. Shalby
W. E. Shalby
CAPT., USN
Director, Aeronics Division
By direction of the Chief of Bureau

AIR RESEARCH AND DEVELOPMENT COMMAND
* * * * *
1346 Connecticut Avenue, N. W.
Washington 6, D. C.
August 1, 1957



Mr. Murray G. Smith
Editor, DATA Magazine
1346 Connecticut Avenue, N. W.
Washington 6, D. C.

Dear Mr. Smith:

Congratulations on the first anniversary of the publication of DATA Magazine.

DATA's complete reports of current research and development have proved of value to the Office in keeping its personnel abreast of the research, military, aerospace and general industry government service activities and general industry.

You have our best wishes for the continued success of your worthwhile publication.

Sincerely,

W. E. Shalby
W. E. Shalby
CAPT., USN
Director of Information Services

COMMUNICATIONS — ELECTRONICS — PHOTOGRAPHY

Communications and
Publishers of SIGNAL—Official Journal of the AFCEA
1624 EYE STREET, N.W., WASHINGTON 6, D. C.
EXECUTIVE 3-3035

EXCUTIVE 3-3033

President: **Frank R. Parks**

President:
Frederick R. Purdy

Vice Presidents:
Maj. Gen. Alvin L. Pachynski, USAF
Maj. Gen. James D. O'Connell, USA
Rear Adm. Henry C. Brown, USN
Joseph E. Heinrich
John R. Howland

Past Presidents:
 David Sarnoff
 Frederick R. Lach
 Theodore S. Gory
 William J. Halligan
 W. Walter Ware
 Joseph R. Robinson
 George W. Bailey
 Percy G. Black

 Council:
 Ralph L. Walker

August 20, 1951

Mr. Murray Q. Smith
Editor, Data
Dupont Circle Building
1346 Connecticut Avenue, N.W.
Washington 6, D. C.

Dear Mr. Smith:

Mr. W. Smith
Mr. Data
Mr. J. C. Bolding
10 Connecticut Avenue, N.W.
Washington 6, D. C.

Dear Mr. Smith:


Data has been the forger line which has drawn together those in industry and government who are interested in obtaining up-to-date and factual information relating to the latest developments of the Military Services. Your range of coverage is terrific and you have made Data a must on the reading list of the informed executive and business man.

I would have profound admiration for the manner in which you have gathered, organized and informative material in easy to read form.

On the occasion of your first publication, I wish you continued success.

We of SIGMA have profound admiration for the industry and the fact that you have made Data a must on the Military Services. We are proud of your first publication and wish you continued success in your future and business career.

You can be justly proud on the occasion of your first publication anniversary. We congratulate you and wish you continued success.

Sincerely,

 W. J. Baird
 Col. USA (Ret.)
 Editor, *SHOOTING*

Sincerely,
W. J. Baird
Col. USA (Ret.)
Editor, SIGNAL

8700 N. SOUTHWEST AVENUE
CHICAGO 14, ILLINOIS
ADDS TO COASTINGRAL BUILDING
1005 NEW STREET, N.W.
WASHINGTON 25, D.C.

August 20, 1957



Mr. Murray Smith
Data Publications
1346 Connecticut Building
Washington 6, D. C.
Dear Murray:

1000

[illegible][illegible]

Sincerely,

2.4. *Things*
 2.4.1. *Things*
 2.4.2. *Things*
 2.4.3. *Things*
 2.4.4. *Things*
 2.4.5. *Things*
 2.4.6. *Things*
 2.4.7. *Things*
 2.4.8. *Things*
 2.4.9. *Things*
 2.4.10. *Things*
 2.4.11. *Things*
 2.4.12. *Things*
 2.4.13. *Things*
 2.4.14. *Things*
 2.4.15. *Things*
 2.4.16. *Things*
 2.4.17. *Things*
 2.4.18. *Things*
 2.4.19. *Things*
 2.4.20. *Things*
 2.4.21. *Things*
 2.4.22. *Things*
 2.4.23. *Things*
 2.4.24. *Things*
 2.4.25. *Things*
 2.4.26. *Things*
 2.4.27. *Things*
 2.4.28. *Things*
 2.4.29. *Things*
 2.4.30. *Things*
 2.4.31. *Things*
 2.4.32. *Things*
 2.4.33. *Things*
 2.4.34. *Things*
 2.4.35. *Things*
 2.4.36. *Things*
 2.4.37. *Things*
 2.4.38. *Things*
 2.4.39. *Things*
 2.4.40. *Things*
 2.4.41. *Things*
 2.4.42. *Things*
 2.4.43. *Things*
 2.4.44. *Things*
 2.4.45. *Things*
 2.4.46. *Things*
 2.4.47. *Things*
 2.4.48. *Things*
 2.4.49. *Things*
 2.4.50. *Things*
 2.4.51. *Things*
 2.4.52. *Things*
 2.4.53. *Things*
 2.4.54. *Things*
 2.4.55. *Things*
 2.4.56. *Things*
 2.4.57. *Things*
 2.4.58. *Things*
 2.4.59. *Things*
 2.4.60. *Things*
 2.4.61. *Things*
 2.4.62. *Things*
 2.4.63. *Things*
 2.4.64. *Things*
 2.4.65. *Things*
 2.4.66. *Things*
 2.4.67. *Things*
 2.4.68. *Things*
 2.4.69. *Things*
 2.4.70. *Things*
 2.4.71. *Things*
 2.4.72. *Things*
 2.4.73. *Things*
 2.4.74. *Things*
 2.4.75. *Things*
 2.4.76. *Things*
 2.4.77. *Things*
 2.4.78. *Things*
 2.4.79. *Things*
 2.4.80. *Things*
 2.4.81. *Things*
 2.4.82. *Things*
 2.4.83. *Things*
 2.4.84. *Things*
 2.4.85. *Things*
 2.4.86. *Things*
 2.4.87. *Things*
 2.4.88. *Things*
 2.4.89. *Things*
 2.4.90. *Things*
 2.4.91. *Things*
 2.4.92. *Things*
 2.4.93. *Things*
 2.4.94. *Things*
 2.4.95. *Things*
 2.4.96. *Things*
 2.4.97. *Things*
 2.4.98. *Things*
 2.4.99. *Things*
 2.4.100. *Things*

briefings!

PROGRESS PAYMENTS PERCENTAGES REDUCED:

DOD Directive 7800.5 of August 10 reduces established percentages for progress payments for new procurement. Action was taken after consideration of various factors, including greater incentives for economy which result when suppliers have a more substantial investment in inventories and work in process under contracts. Special notice is afforded small suppliers and there may be some exceptions here to the reduced percentages. DATA, in this issue, reproduces this document in full as signed by SecDef Wilson.

SOME TO FALL BY WAYSIDE:

Cutbacks in Government spending have thinned the air for plane-makers. The industry attempts to switch from manned-craft to missiles. Aircraft manufacturers are watching hawk-eyed the latest gyrations of procurement policies, meeting the immediate problems at hand by layoffs, expense-cutting, and moves toward diversification. Expectation by top experts in government and industry is that the missile-makers will begin to sift out the weaker members in a survival-of-the-fittest fight in coming years.

ARMY R&D STAFF ELEMENTS LEAVE PENTAGON:

Some 45 officers and civilians representing elements in the Army R&D offices have moved to Fort Belvoir in nearby Virginia to ease the squeeze in space at Pentagon.

INTERLOCKING NORTH AMERICA'S AIR DEFENSE:

Canada and the US agreed to set up an integrated operational control system of air defense forces. Headquarters in Colorado Springs will be responsible to Chiefs of Staffs of both countries.

AEC RESEARCH DIRECTOR RESIGNS:

Dr. Thomas H. Johnson, Director of the AEC Research Division, has resigned to take over as research manager with Raytheon. He was at Brookhaven before going to AEC in 1951.

"PUSHBUTTON" CHANGE TO WARTIME PRODUCTION URGED:

A committee, representing 79 companies engaged in defense production, submitted a report to DOD (at its request) urging that industry be more fully prepared to switch over to a war economy if necessary. Recommendations include: More freedom from Government supervision; less secrecy; solid information as to role of industry; guidance on such things as manpower, machine tools, material in case of mobilization; and coordination of information to determine critical needs and capabilities.

VINSON PUSHES BILL FOR MORE COMPETITIVE SERVICE BUYING:

Congressman Carl Vinson has strongest of three bills now pending on Hill for restricting negotiated bids, bringing more contracts into competitive bidding. Vinson bill, H. R. 8711, states, "If an award is made on any basis other than the lowest price, there shall be published simultaneously with the announcement of the award, a statement of the reason for the choice..."

S U P P O R T F O R I N D U S T R Y

TRANSEALS® - TIME SAVER FOR DRAFTSMEN and ENGINEERS

The truly versatile drafting aid . . . low cost, transparent, printed plastic sheet with "custom-made" matte finish drawing surface, with self-adhering back protected by wax paper. Adheres immediately without heat or burnishing to paper, vellum or cloth.

Draftsmen and designers need no longer spend endless time drawing or lettering repetitive items such as Title Blocks, Revision Blocks, Diagrams, Notes, Symbols, etc.

**Your copy, printed on TRANSEAL® is always uniform
... no variation in style as when drawn by different draftsmen.**

Printed Vellums, Special Tracing and Reproduction Papers

Standard or special drawing sheets in sizes up to 22 x 34
printed by letterpress or offset lithography.

**Other Technical
Services include:**
Government Standard
Parts Books—in 4 vol-
umes
Design Manual for Repair
of Aluminum Alloy
Structures
Preparation and Printing
of Technical Data
Proposals, Presentations,
Facilities, and Sales
Brochures
Audio-Visual Communica-
tions.

For information
write Dept. 97D

Johnson

RESEARCH CORPORATION

250 Craftsmen to serve Industry's Technical and Graphic Arts needs.

Subsidiary of Corydon M. Johnson Co., Inc.

BETHPAGE, LONG ISLAND, NEW YORK

Phone: WElls 8-4600



OPERATIONAL REQUIREMENTS

It is suggested that firms interested in filling the needs stated below communicate directly with the technical branches of the military. Further information is available through DATA.

387. COMMUNICATIONS PROBLEMS NOTED

Reporter for ELECTRONIC WEEK on Navy's Little Creek combat conditions test of communications equipment indicated that problems found included: at sea, radio communications' maze of circuits in use are prone to feedback, crosstalk, and nulling, and in height of activity communications man can never be certain he is talking with correct party; on beach, radio operators find cable connecting handsets to transmitters is inferior; increasing use of mechanical and electromechanical gadgetry in radar poses problems of having adequate personnel to maintain the complex pieces, which are becoming prone to frequent failures (short service Navy tenures create even more problems insofar as electronic maintenance is concerned).

388. PERFECT STRESSED-PANEL FASTENER SOUGHT:

National Aircraft Standards Committee of the Aircraft Industries Association is seeking the perfect stressed-panel fastener. A problem in high performance aircraft is getting access panels back into place after they have been removed. On B-58 bomber engine pods access panels are structurally so much part of skin that pods droop on panels removal; fasteners then do not fit well. Latest fastener to be hailed is Waldes Kohinoor QAF bolt with split nut feature.

389. MERCURY POOL ARCS THEORY STUDIED:

A theory for emission mechanism of mercury pool arcs is sought by ARDC. After tests on a cathode model, it was concluded that the mercury pool arcs operate in the bill-of-fire mode of hot cathode discharge and that the electron emission mechanism is non-thermionic.

390. PROJECTILE DECELERATION

A requirement exists for a device to slow down the rate of descent of small projectiles such as a 155 mm shell to reduce the landing impact to an order of a few hundred G's. The device should be as possible not exceeding the shell size.

391. COUNTER-COUNTERMEASURES

There are several methods of jamming a radar set which are successful in varying degrees. These include such methods as noise jamming, C W jamming, pulse jamming, chaff, spoofing and artificial glint. Methods for combating these various jamming methods are needed.

392. RADAR LINE OF SIGHT LIMITATION

One of the most difficult problems in getting good radar coverage is caused by the fact that the radiated energy will not conform to earth's curvature so that targets below the tangent line between the radar antenna and the earth are generally not visible to the radar. Methods for overcoming this limitation are needed.

393. RADAR RANGE PERFORMANCE

As potential enemy targets become smaller and their velocity increases, the desired radar range becomes increasingly difficult to achieve. Brute force techniques for overcoming this problem such as higher power outputs and larger antennas have limitations which are being approached. New techniques are needed for overcoming this problem.

394. RADAR THREE DIMENSIONAL COVERAGE

A variety of problems exist in effectively utilizing a radar to give accurate height data as well as range and azimuth.

395. METEOROLOGICAL SOUNDING EQUIPMENT

Determine the feasibility of developing equipment to obtain soundings of the atmosphere (temperature, pressure and relative humidity to 100,000 feet or greater) without using airborne instruments such as radiosondes. The equipment is to be ground based and is to be portable.

396. WINDS IN THE STRATOSPHERE

Develop a new technique for measuring the wind speed and direction in the region 100,000 to 400,000

feet. Equipment is to be carried aloft in a small sounding rocket. Determination of the wind speed and direction is to be made during either the ascent or the descent of the rocket.

397. QUARTZ CRYSTAL UNITS

a. Develop means whereby quartz crystal unit aging is minimized in order to meet the increasingly stringent requirements of military electronic equipments, where stabilities of 1 in 109 per week or better are required.

b. Develop quartz crystal units which must function reliably at temperatures up to 300°C and higher with stabilities of at least .005 percent for use in equipments used in high speed aircraft and guided missiles.

398. HEAT DISSIPATION IN ELECTRONIC ASSEMBLIES

The high incident temperatures in small electronic devices requires a new means of cooling such devices other than conventional means which require electrical energy and comparatively large cooling devices, such as blowers, fans, etc. A static device or material is needed to serve as a heat rectifier to provide unidirectional transfer of heat or a unidirectional heat exchanger.

399. ENCAPSULATING MATERIAL

There is an urgent need of a potting or encapsulating material for use with transistors which will provide a transistor assembly having high heat dissipation and mechanical ruggedness characteristics. The material must have these characteristics in addition to other traits which will not cause chemical decomposition of the transistor materials nor affect their performance.

400. LOW TEMPERATURE BATTERY

Development of an alkaline-zinc-mercuric oxide battery system that will operate satisfactorily at low temperatures.

401. BATTERY TESTER

Development of a testing device for dry batteries which will give a reliable prediction of performance under fixed load conditions for periods of one hour, ten hours, one-hundred hours operation. Such a tester should be non-destructive to the battery to which it is applied, and should be capable of indicating the capacity of the battery, i.e., length of time the battery will sustain a given load at fixed minimum voltages.

402. SOLID ELECTROLYTE BATTERY

A solid ion conducting material is needed which will function as the electrolyte of an electrochemical cell and can be used in conjunction with an electrode couple having an EMF in excess of one volt. The ability of such a cell to deliver a practical current density of 100 micro-amps per square centimeter or less between -40°F and 165°F and have a long shelf life is desired.

403. BATTERY SEALING MATERIAL

Development of a dry battery cell seal material which will effectively prevent moisture loss over a temperature range of -65°F to 160°F.

404. DRY BATTERY TEST METHOD

Development of an accelerated test method for evaluating dry battery manganese dioxide, and development of an accelerated dry battery test method which will indicate quality and shelf life.

405. HIGH SPEED FILM

Method for increasing the speed of photographic film to permit exposures at the illumination provided by the full moon at f/3.5 and 1/200 sec.

406. PLASTIC EMBOSING TECHNIQUE

Method of embossing a lenticulation of non-spherical shape onto sheets of plastic material, sheet size about 5 x 5 feet or more. The lenticulation must be perfectly regular, no overlapping or gaps between adjacent lenticulations. Size of the individual elements approximately 1/16" or less.

407. PROTECTIVE COATINGS

Devise a method of coating or otherwise protecting the surfaces of transistors so as to prevent deterioration of characteristics with life and temperatures ranging from -55° to approximately 200°C.

408. HIGH RESISTIVITY SILICON

Devise equipment to grow large single crystal high resistivity silicon by a method which does not use a crucible.

409. BROAD BAND AMPLIFIER

An amplifier with high gain and bandwidth for frequencies up to and including UHF, of lightweight, rugged and reliable design having relatively simple low drain power supply requirements.

410. QUICK HEATING CATHODE

An efficient indirectly heated, unipotential, thermionic cathode capable of operation in less than one second.

411. THERMIONIC OR COLD EMITTER

Devise a thermionic emitter or cold emitter capable of greatly increased efficiency and suitable for use as a cathode in the usual thermionic electron tube.

412. VIBRATION LEVEL DETECTOR FOR HELICOPTERS

A device which will measure and present a continuous recording of critical vibration levels to helicopter flight crew members. Terms of reference should be related to aircraft structural strength and human physical comfort.

413. ROTOR BLADE STALL INDICATOR

A device which will measure and present a continuous recording of helicopter retreating blade stall. Terms of reference should be related to power and vibration limits as related to this phenomena.

414. HELICOPTER INSTRUMENT FLIGHT

Satisfactory instrumentation, development of techniques and aids to permit instrument flight of helicopter under weather condition minimums equivalent to fixed wing, transport type aircraft. Systems should have same degree (or improved) of reliability, simplicity, ease of maintenance, and should feature low cost, minimum effect on aircraft control, and performance characteristics.

415. COATING FOR SKIS OR SKI TYPE LANDING GEAR

Such a material should have the following properties: Low coefficient of friction on dirt, clay, etc.; excellent abrasion resistance; easy to apply; light weight; good adhesion to metal or wood; will not freeze to ice; and will not absorb moisture, rot, or deteriorate when exposed to the elements.

416. ELECTRONIC "STETHESCOPE" FOR GEAR COMPONENTS IN OPERATION

A device for detecting and comparing sounds emitted by worn machine components such as bearings or gears with sounds of similar units functioning properly. The device is to be used to inspect machine components (transmissions, etc.) in order to detect incipient wear or damage leading to breakdown.



General Textile Mills Inc.

LEADERS IN DESIGN AND MANUFACTURE OF PROTECTIVE
HELMETS OF ALL TYPES

AVAILABLE TO BOTH DOMESTIC AND FOREIGN BUYERS

SPECIALIZING IN THE FOLLOWING:

- Pilot Protective Helmets
- Air Crewman Helmets
- Tank Crewman Helmets
- Crop Dusting Helmets
- Construction Worker Helmets
- Fireman Helmets
- Electrical Worker Helmet
- Sport Car and Boat Racing Helmets
- Body Armor
- Reinforced Plastic Containers for any purpose
- Energy Absorbing Materials
- Portable Aircraft Maintenance Shelters
- Disreefing Devices
- Cargo Parachutes
- Personnel Parachutes
- Life Jackets

Write for Information —
General Textile Mills, Inc.
Dept. D
450 Seventh Avenue
New York 1, N.Y.



NEW DIRECTIVE

August 10, 1957
NUMBER 7800.5



Department of Defense Directive

SUBJECT Defense Contract Financing - Percentages for Progress Payments Based on Costs

- References:**
- (a) Department of Defense Directive No. 7800.1, "Defense Contract Financing Policy"
 - (b) Department of Defense Directive No. 7840.1, "Defense Supply Contract Financing - Progress Payments Based on Costs"
 - (c) Department of Defense Directive No. 7800.4, "Defense Contract Financing Policy - Small Business Concerns"
 - (d) Joint Regulations (AR 715-6; NAVEXOS P-1006; AFR 173-133) dated 17 December 1956, Subject: Defense Contract Financing

I. PURPOSE

It is the purpose of this directive to establish percentages for progress payments that are lower than the cost percentages for progress payments established by references (b), (c) and (d), and to modify those references accordingly.

II. POLICY

References (b), (c) and (d) establish normal percentages for progress payments at 75 per cent of total costs or 90 per cent of direct labor and material costs.

The percentages for progress payments mentioned in Part III of reference (b), Part III.A and Part III.D of reference (c), and paragraphs 506, 507, 510.1, 510.2, 511.2, 514.3, 514.4 and 515(a) of reference (d) shall be 70 per cent of total costs (instead of 75 per cent) or 85 per cent of costs of direct labor and material (instead of 90 per cent) for new procurement effected on and after 1 September 1957.

These reduced percentages shall apply to new contracts, new procurement effected by supplements, amendments or modifications of existing contracts, definitive contracts superseding letter contracts, instruments effecting new procurement under basic or master agreements, and to all supplements, amendments or modifications made on or after 1 September 1957 which affect or provide for progress payments, as well as to any outstanding contracts which contain optional provision as to progress payment percentages, after due notice by the contracting officer. Percentages above 70 per cent of total costs or 85 per cent of costs of direct labor and material may be approved only in conformity to the standards and procedures prescribed by Part IV of reference (b); except that for contracts with small business concerns contracting officers are authorized to provide, so long as reasonably necessary, progress payment percentages up to 75 per cent of total costs or 90 per cent of costs of direct labor and material.

Contracting officers are authorized and encouraged to negotiate amendments of existing contracts so as to reduce the progress payment percentages therein stated to the lower percentages mentioned above.

III. AMENDMENTS

References (b) and (c) are hereby amended and will be modified as set forth herein, and reference (d) will be modified throughout to conform to this directive.

Part VII of reference (c) is hereby amended to read as follows:

"VII. SMALL BUSINESS - GENERAL

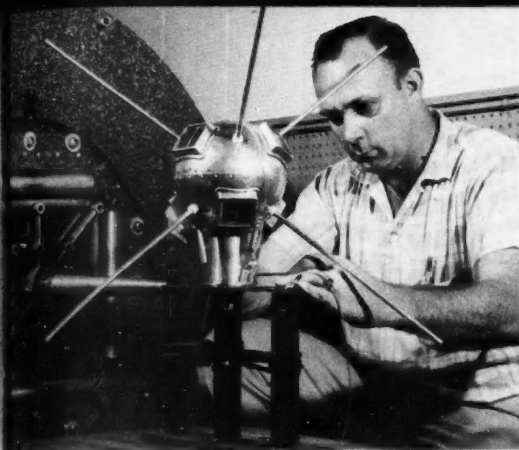
Immediate and continuing attention must be given at all levels to insure that constructive measures will be taken to facilitate and accelerate necessary contract financing assistance to small suppliers. Every reasonable effort must be made to assist small suppliers in the resolution of their problems relative to the financing of contract performance, including any cases in which it may be reasonably necessary to increase the rate for progress payments and to assist them in understanding and complying with the requirements of performance as to payment forms, inspection and cost accounting."

IV. EFFECTIVE DATE

This directive may be applied from the date of issuance, and shall be made operative throughout the Department of Defense on and after 1 September 1957.

C. Wilson

Secretary of Defense



SATELLITE UNDERGOES VIBRATION TEST

Six-inch satellite is readied for vibration test up to 25G's at NRL. Florida tests with small missiles will be forerunners of launching of 20-inch sphere during IGY. This tiny test satellite will contain miniature radio transmitters. Six rectangles on surface are solar batteries to be evaluated for possible use as power supplies for later satellites.

///Navy Info USN 709918/

419. ADAPTABLE TO CHANGE WITH THE TIMES:

A modified T-33 jet trainer can now alter its stability and control system to simulate changes in an aircraft's physical characteristics. The research vehicle, developed for AF by Cornell Aeronautical Laboratory, Inc., can change its flight characteristics along vertical, lateral, and longitudinal axes, as if it had shorter wings, larger tail, different mass distribution, etc. The "front" pilot in the two-seater T-33 flies the plane, while the "rear" pilot adjusts a console of knobs to create the different aircrafts.

///Cornell Aero Lab 0812/

420. INFRARED HOT MISSILE, FALCON GAR-2A:

Powerful punch for all-weather interceptor pilots of ARDC has been unveiled. It is the FALCON GAR-2A, which moves into its target at speed of sound under control of an infrared guidance system. This 6½ foot, 120-pound featherweight can turn in or out, climb or dive after the target, thus giving pilot wider latitude in launching missile. Hughes Aircraft also produces the radar-guided FALCON GAR-1.

///Air Force Info 0810/

421. ARMY AIRCRAFT KEY TO MOBILITY:

Greater mobility on battlefield through use of planes for moving supplies, evacuating wounded, and reconnoitering is aim of Army. Aircraft in Army total 4504 as compared to 3787 in 1955; 2569 are fixed-wing and 1935, helicopters.

///Army Info Digest 09-18/

422. TURBOJET UTILITY PLANE DESIGNED:

North American, at own expense, is building utility plane for the military to answer need for craft to serve as transport and combat-ready trainer. Called the SABRELINER, the sleek plane will carry six, travel at 500 mph, powered by two GE J-85 turbojet engines.

///North American Valley Skywriter 0726/

423. SEAMASTERS CUT TO 24:

Navy has cut back order for 30 SEAMASTER jet bombers to 24. Martin of Baltimore builds this multijet.

///Navy Info./

424. ALL-WIND UNIDIRECTIONAL RUNWAYS MAY BE STUDIED:

Bill by Congressman Staggers of West Virginia directs CAA to evaluate use of all-wind unidirectional runway airport from standpoint of solving problems related to safe operation of aircraft on single or on parallel runways regardless of wind direction or velocity and related to protection of communities from noise, nuisance, and hazards. All-wind unidirectional runway is defined as one shielded from crosswind components by means of air-permeable wind dispersing screens, so constructed as to reduce velocity of winds blowing at an angle.

///HR. 8769/

425. P2V PREHEATING IMPROVED BY SQUADRON:

Navy Squadron VP-10 in Arctic found P2V's too much ventilated, resulting in frozen oil lines, blown seals, ruptured air coolers, and engines that failed to start. The men designed a set of aluminum baffles to close area aft of prop and a 42-inch cotton duck cover for wheel wells. Men with gloves can install these in ten minutes per engine. Engines start up fine at minus 25 degrees (F).

///NavAir News 08-37/

426. STORMS UP TO 50 MILES OFF RADARED FOR PILOT:

New weather-avoidance radar will warn pilots of storms up to 50 miles ahead. Small, 50-pound system developed by RCA may see both military and private aircraft use.

///Army Av. Digest 07/

REGULUS II IN TRIPLICATE LOOKS IMPRESSIVE

Navy's new **REGULUS II** test vehicle, lined up in right echelon, makes an impressive sight. This trim missile is launchable from submarine. Chance-Vought Aircraft of Dallas is manufacturer.

///Navy Info USN 709881



427. POWERPLANT MAY BE CARRIED IN POD:

Convair is viewing possibility that powerplant may be carried in pod to increase B-58 speed. Now pods have fuel and bomb space, or they can carry reconnaissance cameras and electronic countermeasures.

///Convair/

428. STRATOSCOPE PROJECT SHOOTS AT SUN:

Long-time dependence on mountain top observatories for photos of sun may be ended. Navy made preliminary test with Project STRATOSCOPE balloon carrying pointing mechanism 22 August. Trial may prove way to get pictures three times sharper than any ever taken before. Next balloon will carry 33 mm motion picture camera to take 8000 pictures in three hours. Princeton is prime contractor. ///Pentagon OPI 0822/

429. BLIMPS GET LARGEST RADAR ANTENNAS:

Probably largest radar antennas ever on aircraft are being placed on Navy airships. Blimp envelope serves as a radome but does not interfere with functions of antenna.

///ONR Research Reviews/

430. ANTICOLLISION MIRROR:

Infrared-sensitive instrument in new device will pick up approaching hot engine, flash message to pilot. Proximity warning indicator has been developed by Aerojet-General as result of Grant Canyon disaster last year. CAA analysis is reportedly that at least 80 percent of mid-air collisions studied could have been prevented if new device had been in operation.

///CAA 0819/

**It's not nailed down,
It's Fansteel 77 Metal**



Show-goers at the Fansteel Exhibit are invariably astonished by the weight of 77 Metal. Many assume that it is actually "fastened" to the display table.



FANSTEEL

Fansteel 77 Metal's startling weight provides the solution to many engineering problems . . . especially those concerning inertia or momentum, counter balancing, vibration control and shielding. Its use is recommended whenever the objective is . . .

Maximum Density in Limited Space

HOW HEAVY? *Twice as heavy as steel, 50% heavier than lead.*
(.613 lbs. per cubic inch.)

HOW STRONG? Tensile strengths to 140,000 psi. Transverse rupture to 270,000 psi. Elongation to 10%.

HOW EASILY MACHINED? Machines like cast iron . . . takes fine finishes, close tolerances.

HOW ECONOMICAL? Made by powder metallurgy of pure tungsten, copper and nickel, waste of materials is limited, machining costs are cut.

Fansteel 77 Metal Is The Ideal Material For Use In . . . *Aircraft aileron counterweights, Rotors, Governors, Balance Weights of all types, Radiation Shielding, Vibration Damping Devices.*

Write for this free booklet



POWDER METALLURGICAL CORPORATION

NORTH CHICAGO, ILLINOIS, U. S. A.

431. IGY CALLS OUT HIGH RELIANCE ON ELECTRONICS:

As much as one-quarter of funds expended by USA for IGY has been for electronics gear in some form, it is generally calculated. In other areas also, studies rely on electrical equipment. Radiosonde and radiowind meteorological stations will be increased in South America to 32 and in Southwest Africa to 24 during IGY for basic research in improving wind forecasts for aircraft -- may be part of trend toward consideration of Antarctic on main flight routes. ///DATA Composite/

432. IRRIGATION NEEDS TOLD BY ELECTRICITY:

Farmers some day may tell when crops need irrigation by using simple electrical device that USDA has tested; two small prongs are stuck into plant stem; they are connected to ohmmeter; plant's electrical resistance goes down as moisture goes up. Drying out of solid framework or cell walls seems to increase electrical resistance.

///Agriculture Dept. 0817/

433. RAYTHEON SPACISTOR MAY MEET GREAT HOPES:

Although not government-sponsored, Raytheon's new device, the spacistor (still experimental), promises three major advantages over best transistors and may prove of interest in missile development: It may amplify at frequencies up to 10,000 mc, as much as 50 times higher than transistor; it can be made from materials unsuited for transistor and may operate at temperature up to 500 (C), whereas the germanium and silicon transistors of today will not operate above 200 (C); high input and output impedance will allow many new applications. Addition of modulator is perhaps chief advantage over transistors.

///Elec Week 0722/

434. PHOTOGRAPHIC MAPPING RADAR DEVELOPED:

System for producing continuous strip photo of picture appearing on radarscope has been developed by Texas Instruments, Inc. First order came from Air Force; Coast Guard has used system for locating and tracking icebergs. Comparatively small objects on terrain are sharp and clear on photo map produced by this system, which operates effectively both day and night.

///Texas Instrument Release/

435. SHORTCUT FOR PRINTED EXPERIMENTAL WIRING BOARDS:

Easier method for producing experimental wiring circuits, when clean, professional-looking result is not necessary, has been devised by Harold Bryan of Navy Electronics Lab, San Diego. He makes a negative with pencil on tissue, using Ozalid carbon to provide opaque back. Hard pencil, firm pressure, a good result can be obtained quickly. Since changes in experimental work come frequently, usual process of making photo negative is costly and carbon method saves time and money.

///BuShips Journal 08-34/

436. SOVIETS PLAN HUGE POWER SYSTEMS:

USSR plans single power system for its European section, and one for Siberia to be linked by parallel powerlines 3600 miles long. Hydro-power stations on Volga will be connecting links within network of nuclear and conventional electrical systems.

///Military Review 06/

437. HAILS TRANSISTORS:

By 1960 there should be more transistors sold and placed in new equipment than vacuum tubes, states Daniel E. Noble of Motorola in Signal. Hopes to see accelerated trend toward design of devices with unit or module and submodule construction, and, wherever possible, sealed modules which will be replaced but not repaired in field. Great betterment in maintenance predicted if trend continues, because total complexity of equipment is reduced to the limited complexing of single faulty module or submodule.

///SIGNAL Magazine 06/

438. TIMING GENERATOR CAN TRIGGER EIGHT OPERATIONS:

New electronic triggering device controls or coordinates radar units, communications, and other electronic systems using 400 cycle power source, can trigger eight to occur simultaneously.

///Philco/

439. AIR FORCE HAS IMPROVED ALTIMETER:

New altimeter is accurate to within 40 feet at 60,000 feet. Sends radar signal to ground and measures return.

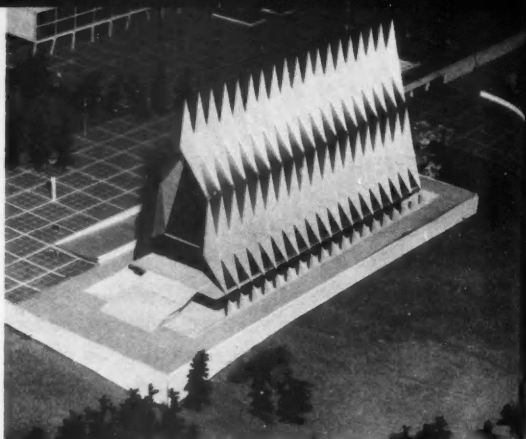
///ARDC 0725/

CONSTRUCTION

AIR FORCE ACADEMY CHURCH

Model of proposed aluminum chapel for Air Force Academy, Colorado Springs, is approved by SecAir. Skidmore, Owings, and Merrill of Chicago designed building to include three chapels under one roof, a Protestant chapel seating 900, a Catholic chapel seating 500, and a Jewish chapel seating 100.

///Pentagon OPI 0810 157145 AC/



440. NAVY ACOUSTIC AND PRESSURE RANGE GOING UP:

Acoustic and pressure data from ships will be checked at range installation at Cape Henry, scheduled for completion this year. Selection of site was based on volume of naval and interfering traffic, low background noise level, necessary water conditions, and ease of logistic support. Concrete, air-conditioned building 100 feet from Chesapeake shoreline will house personnel and instruments. Permanently mounted transducers will transmit the received signal through multiconductor submarine cable to range building.

///BuShips Journal 08-2/

441. POLAR EXCAVATING PRESENTS PROBLEMS:

Army Engineers are seeking better ways to excavate frozen areas for such projects as field fortifications, shallow wells, waste disposal pits, and underground storage facilities. Lab tests in boring indicate difficulties in discharging the spoil are encountered by auger operated on centrifugal force principle. Studies may be continued with high-speed jets of compressed air.

///Army Reservist 08-7/

442. DUNE SAND COMPACTION PROBLEM FACED IN SPAIN:

Navy's largest European installation is air station at Rota, southern tip of Spain; dune sand prevalent. Spanish runway contractor faced difficulty with subgrade compaction, but it was found dune sand could be compacted to 100 percent standard density by placing 36-inch lift of sand and covering with 6-inch lift of base course material. Vibro-compactor of Swedish make was used. Maximum density obtained under lab conditions was 102; but field densities reached 109 pounds per cubic foot.

///CEC Bulletin 07-12/

443. NEW GAS ENGINES CUT MAINTENANCE:

Army Engineers are purchasing the first of industrial-type small air-cooled gas engines which come in family sets of sizes ranging from 1/2 to 20 horsepower. Engine has high degree of interchangeable parts, thus replacing 78 different sizes and types of engines. Continental Motors in Detroit is testing for mass production. Useful engine to run generators, air compressors, tent heaters, conveyors, refrigeration units, water and gas pumps, shower bath units, bakery mixers, and so on. Pre-overhaul service expected to be 1500 hours; fewer repairs needed; less stockage -- maximum of 200 parts or assemblies in contrast to 23,000 for former gas engines. Maintenance men making repairs will in most instances replace major components of engines instead of replacing single parts. Bulk of items needed in field repair will be reduced, an important point in air lifts. ///Pentagon OPI 0809/

444. NEUTRON CALIBRATION SERVICE:

Firms or laboratories dealing with fundamental nuclear reactors, problems of protection from neutron radiation, and industrial application of neutron beams can avail themselves of the National Bureau of Standards calibration service for laboratory standard neutron sources. ///NBS/

445. AEC PATENTS RELEASED TO PUBLIC:

A list of 44 patents owned by the government and held by AEC is available upon request from the Commission. This agency will grant non-exclusive, royalty-free licenses on the patents as part of its program to supply industry with non-secret technological information. ///Atomic Energy Commission/

446. TINY TURBINE AIRCRAFT ENGINE SEEN FOR HELICOPTER:

Solar Aircraft is designing smallest gas turbine ever built for use to power a one-man helicopter. Engine will be 20 in. high with 15½-in. diameter. Company claims that 50 lb. machine will produce 55 shaft hp plus 12 lbs of jet thrust on hottest summer day. Army and Navy financing venture. ///NavAir News 08-18/

LOGISTICS/MATERIALS

447. HIGH TEMPERATURE METAL BEING INVESTIGATED:

Rensselaer Polytechnic of Troy, New York, will investigate niobium base materials under a Navy contract. Niobium (also known as columbium) is a primary element and high temp metal with possible application in gas turbines and jet engines. Recently, deposits have been located and developed in North America. Limited quantities previously came from Africa.

///Pentagon OPI 0731/

448. HEAT OF COMBUSTION MEASUREMENTS IMPROVED:

Highly accurate values for aircraft fuels net heat of combustion are required in military contract bids; however, this property is measured by complex and expensive apparatus not available to most refineries. National Bureau of Standards researchers show that net heat of combustion is a function not only of the aniline-gravity product but of other variables as well. Approximate linear relationships were found in each gasoline investigated. Results indicate that the most accurate means for estimating aircraft fuel heat of combustion is based on composition of the fuel in terms of hydrocarbon types.

///NBS Rept 2131/

449. BETTER ANTIWEAR STEAM TURBINE OIL NEEDED:

Navy needs further experience to determine best antiwear steam turbine oil. TLO 1103 is used in FORRESTAL and TLO 1308 in SARATOGA. It may be that no differences will be shown in oils of this level, but Navy feels justified in eliminating oils from its system below this standard. Comments in BuShips Journal indicate best oil must be non-corrosive. Carburizing gears would enable use of same oil; splitting lubrication system would allow use of highly compounded gear oils, permitting extremely high "K" or PVT factors with same metallurgy.

///BuShips Journal 07-7/

450. CAA SETS NEW TAXIWAY STANDARDS:

Rapid clearance of runways is CAA aim in new taxiway standards. Aircraft can be turned off runways at speeds up to 40 mph. Exits would be within 3500 feet from touchdown for normal landings and at about 6000 feet for jets. Holding aprons also are recommended.

///CAA Airport Eng. Bulletin #6/

FORKLIFT TRUCK MOVES THROUGH SURF OR SNOW

Rough-terrain forklift truck proves undismayed by sand dunes, surf, or snow - can carry cargo through five feet of water from landing craft. Demonstration at Fort Story, Virginia, shows versatility of new vehicle which can move sideways if necessary. Models have three-ton or five-ton capacity.

///Army Info APS-57-105



451. SUPPLY AND SERVICE ADMINISTRATION URGED:

The several pending bills which would create a Supply and Service Administration as a Department within DOD remain in pigeonholes as of the end of August. Congressman Thompson of New Jersey introduced first bill on subject this session, H.R. 7639. Measures also seek to provide that at least 25 percent of procurement contracts be let to small business. Improvement and standardization of commodity items would be a goal. In this connection, DATA readers may wish to read Defense Standardization Program booklet (House Report 822) which is seventh report by Government Operations Committee, wherein it is noted that enormous savings potential has not been realized and that this area of military supply deserves closest subcommittee scrutiny and followup. Fiscal year 1961 is target for completion of preparatory standardization program. Rapid technological developments necessitate continuous revision in plans.

///DATA Composite/

452. NO-MELT MISSILE MEANS MAJOR BREAKTHROUGH:

Fabrication problem -- finding material to withstand fantastic heat caused by friction in air -- may be licked, Army believes. Moment of missile's re-entry into earth's atmosphere after mounting to 600 miles or more caused bafflement until iron-out of basic trouble. Nose cone casings now built survive scorching re-entry into atmosphere. Ceramic materials are being used.

///Army Info./

453. RESUPPLY OF ANTARCTIC STATIONS SCHEDULED:

Deep Freeze III ships will be underway early Sept. to Dec. to resupply the U. S. Antarctic stations housing scientists during IGY.

///Pentagon OPI 0819/

MEDICAL NEWS

454. KILL THE CHILL WITH PILLS:

A pill that causes the body to generate heat might be a new addition to Air Force survival kits if tests now in progress are successful. Glycine, an amino-acid, might enable a man to stay alive longer in icy waters or extremely cold climate. Aeromedical Lab at Fairbanks is testing pill on volunteers and reports no ill effects. Evidence also turned up by Air Force indicates glycine may be used in heart surgery to enable heart to be chilled past what is now considered critical temperature.

///Navy Times 0803/

455. ONR STUDIES BLOOD STORAGE:

Technique for preserving blood indefinitely utilizes liquid nitrogen, by means of which temperature of blood is reduced to about minus 90 degrees (C); blood then looks like pink sand. ONR finds no deterioration or change in properties of blood when it is reconstituted and administered to patients. Prior to discovery of this technique, blood could be preserved only 20 to 30 days.

///ONR Research Reviews 08-23/

456. TESTING PERSONNEL WARNED ON RADAR RADIATION:

DOD personnel have been warned to keep at minimum distances from rotational center of radar antennas. Direct visual examination of any microwave radiator, reflector, waveguide opening, or waveguide horn during periods of transmission is forbidden. Further review by BuMed is planned. Shipboard normal radar practices are believed to be safe. Intensity level of 0.01 watts /CM² is tentatively accepted as a working tolerance. Time, as well as distance, is considered.

///BuMed 0812/

457. LOWER PRICES SET BY AEC ON COBALT 60:

To encourage more widespread distribution and use of radioisotope in industrial, medical, and research applications, AEC has reduced the price of Cobalt 60. New rate is from \$2 to \$5 per curie. Today AEC produces about 300,000 curies annually. Increased market may cause industry to start production in private reactors. If supply is short meantime, medical requirements will get preference. Use of radiation from Cobalt 60 is in teletherapy units for cancer treating.///AEC 0801/



HONEST JOHN ROCKET GETS A WORK-OUT IN ITALY

The 510th Field Artillery Rocket Battalion includes ground-to-ground rocket titled HONEST JOHN in field training demonstration at Asiago, north of Verona, Italy.

///Army Info 0814 SC508891/

458. BONN TO RELY ON ALLIES FOR MAJOR ORDNANCE:

Army releases indicate that West Germany will rely for five more years on allies for design and finished products of major ordnance but may produce own by 1962. Possible French-German atomic weapons production believed informally suggested by Bonn. Latest U.S. tank, the M48A-1 medium tank, outfits two armored divisions now in being and will equip other divisions now planned -- 800 tanks purchased.

///Armed Forces Info Release 0815/

459. 30MM HIGH SPEED MACHINE GUN:

Look for larger caliber machine guns to be installed on AF supersonic planes. General Electric has developed 30 mm gun similar to T171 20 mm Gatling Gun, mounting six rotating barrels from a central feed and firing housing. New Vulcan T212 maintains same fire rate as cousin but damage is reportedly much greater. *///Pentagon OPI 0731/*

460. LACROSSE MISSILES IN PRODUCTION:

Tactical LACROSSE missiles are coming off production line at Martin's Orlando plant and will be used by Army for close and general support. The 20-foot missile has four swept wings and four tail fins. It is controlled by forward guidance stations. *///Pentagon OPI 0802/*

461. SWISS MISSILE PROGRAM:

Swiss missile program is private enterprise, reports Library of Congress, as opposed to other European missile programs. *///L of C/*

SHIPS

462. ROUGH SEAS CONTINUE TO MENACE HULLS:

Terrific strains on ships hulls caused by rough seas continue to present a research problem to designers. "Since we do not know all we should of the quality of steel, occasionally there are disastrous failures." So spoke Cdr. R. T. Miller of BuShips in addressing high school students in Gambrals, Maryland, in possible forerunner of many talks by Navy experts on mathematics and engineering problems, pointing up for U.S. teenagers the need for their skills in these fields. ///BuShips Jrnl 08/

463. ATOMIC POWERED MERCHANT SHIP IN THE MILL:

Keel of first atomic merchant ship will be laid in spring of 1958, according to AEC and Maritime Administration, joint sponsors. Cruising radius of 350,000 miles is planned, as contrasted to conventional ship's 13,000 miles. Overall length will be 587 feet, with beam of 78 feet and draft of over 31 feet. Speed will be 20.25 knots; crew will number 130. Passenger staterooms, swimming pool, play deck, and other luxuries are envisioned. Refueling set every three years. Babcock and Wilcox company has contract on pressurized water nuclear propulsion plant. However, industry as a whole has been invited to propose designs for gas-cooled reactor coupled with a closed cycle gas turbine suitable for propelling merchant ships. ///DATA Composite/

464. LIGHTWEIGHT ARMY NEOPRENE BOAT:

Lightweight, pneumatic type craft of neoprene-coated nylon will carry 15 in assault landings. Army Engineers develop boat to travel over 7 mph with a 25HP outboard motor. Main tube is divided into six compartments and as many as four can be damaged without halting boat. Boat may be dropped by air and can be carried by six men.

///Ft. Belvoir Eng. R&D/

465. AMBER FLASHES MAY SYNCHRONIZE WITH SHIPS' WHISTLE:

Military Sea Transport Service may install revolutionary signal flashes to eliminate misunderstandings of whistles or provide warning if winds prevent hearing whistle. Some Great Lakes ore ships already use system. If Coast Guard authorizes, MSTTS will go ahead. ///MSTS/

466. REMOTE-CONTROLLED TRACTOR BEING TESTED:

What is believed to be first application of remote control principle to piece of construction equipment is being tested on robot tractor at Fort Belvoir. Standard military radio and special control box enable operator to control tractor from jeep or helicopter. TV camera on the tractor could enable operator to control it from distances up to 15 miles. Remote-controlled equipment similar to tractor could be used for construction work in radioactive or combat areas and in fire fighting. The prototype tractor is the commercial tournadozer built by LeTourneau-Westinghouse.
///Ft. Belvoir Eng. R&D/

467. MECHANICAL MULE CONTRACTS LET:

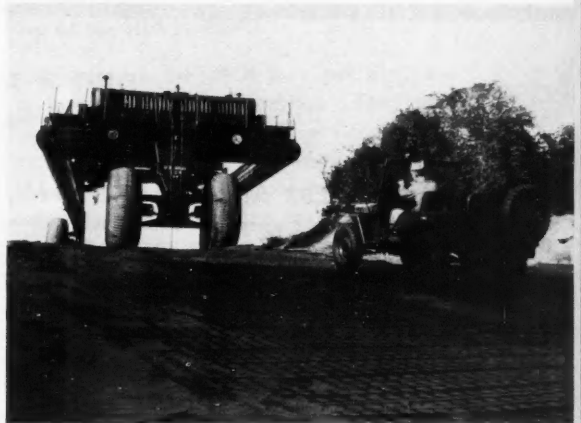
Advanced version of Mechanical Mule, a flat bed vehicle of 900 pounds capable of carrying 1000 pounds, will be pushed under contracts of over \$6 million awarded by Army to Willys Motors; Marines will use 281. Convertible model will operate over rough terrain at higher speed than old model of 25 mph.
///Pentagon OPI 0718/

468. ARMY TO INCREASE TIRE RECAPPING:

Increased portion of Army's tactical military tire recapping program will be contracted to private industry beginning probably in Oct. Estimated 60,000 tires recapped this fiscal year at cost of over million.
///Pentagon OPI 0711/

GIANT LANDING CRAFT RETRIEVER LUMBERS IN

Only one of its kind so far, this 101-ton, 75-foot LCR lumbers along dwarfing jeep. Giant vehicle developed by Army Transportation Corps is designed to refloat landing craft.
///Army Info SC503600/



CAIDIN'S CORNER



FIRST OF THE NEW BREED

By Martin Caidin

The HUSTLER rates at Mach 2 speeds, which represent a speed advantage more than twice as great as our fastest operational bomber, Boeing's massive B-52. Indeed, there is not a single operational fighter which can pace the HUSTLER at its maximum target speed, a situation which Boeing enjoyed when the B-52 made its own debut.

No other single airplane that has come along in years has pleased the USAF so much as its newest pride and joy, Convair's brilliantly-conceived B-58 HUSTLER. In a single package Convair has given USAF a new weapon system which advances the state of the art in bombardment aviation to an astonishing new high.

The vital design breakthroughs which endow the B-58 with its outstanding performance are the development of the area rule fuselage, development and use of revolutionary sandwich material for the HUSTLER'S skin, and the performance of the J-79 engine. The new skin is perhaps the most important, for the heat-and fatigue-resistant honeycomb fiberglass and metal material holds great promise for further development to permit sustained flight, within a decade, at hypersonic speeds.

This new sandwich material fails, paradoxically, to meet the HUSTLER'S requirements for heat resistance. The airplane is currently restricted from maximum-power flight specifically because of the high temperatures generated from air friction. At the redline speeds (bordering on Mach 2) the powerful GE J-79 engines still have considerable power reserve. Thus for the first time in bomber history power and aerodynamic efficiency are no longer the limiting performance factors — the B-58 is simply smack in the midst of the so-called thermal barrier.

Those are mighty big grins on the faces of GE's engineers. Their all-steel J-79, installed in the Lockheed F-104A and the B-58, has twice struck extra pay dirt. Both the F-104A (which has flown at Mach 2.9 and in a zoom climb exceeded 100,000 feet) and the B-58 are flying much faster than they were designed to go. And there's room left for increased speed and altitude performance.

The B-58 is one of the most impressive airplanes this writer has ever seen. The bomber earns respect for other than the usual reasons — fantastic size, umpteen engines, razor blades for wings — which typify so many other aircraft. (Neither are there any guns on the B-58; another first for Convair, whose last bomber sported 16 cannon.) The HUSTLER is, and gives the impression of, a package of superb aerodynamic design and efficiency. Only half again as large as the single-seat

F-102A Dagger, it emphasizes the new future in design. The B-36 and the B-52 are both the last of their breed; you can build bigger bombers than even these 200-ton plus monsters, but the end result doesn't pay off in performance and/or maintenance. Plus the far greater vulnerability of the older planes.

The HUSTLER is the first of the new breed — smaller, high performing bombers. Behind the work of the aeronautical industry to make this possible, of course, is an equally significant design victory — the advances in nuclear weapon technology which produce "big bangs in small packages." Convair engineers pounced upon this achievement in spectacular fashion, represented in the pod concept of the B-58. The pod, which can be a glorified gas tank, an immense hydrogen bomb, or a high-supersonic air-to-ground missile, allows the B-58 weapon system to utilize to full advantage all warhead technology advances. In respect to the machine's aerodynamic efficiency, the B-58 flies home clean, without the waste weight and volume of an empty fuel tank.

There are many other plus sides for the B-58, of course. Several HUSTLER test pilots told me the ship is as easy to fly as the T-33, and that the delta wing provides excellent "forgiving" characteristics at low speeds. That's saying a lot for a bomber as hot as the HUSTLER.

One role the B-58 may yet play hasn't received any press attention. Take another look at that delta planform and the excellent altitude capability it provides. Then study the elaborate electronics of the ship, the operating speeds, endurance and range, and the special design concept. Against intercontinental-range, high-flying bombers, the HUSTLER suddenly assumes stature as a "far area" interceptor. Right now — its the best one flying in the country.

- E N D -

MAGAZINE PREVIEW & REVIEWS

MISSILES & ROCKETS (Available Sept. 3, 1957)

September issue is devoted to progress in liquid rocket propellants and exotic fuels. M/R also contains a six-page roundup on Patrick AFB including complete analysis of living and housing conditions. This is the first in a series of special reports on missile communities throughout the country. Extensive photo coverage is provided in September M/R of record-breaking balloon flight by Maj. David Simons, USAF.

ORDNANCE (Available Sept. 1, 1957)

Feature of this issue is a four-page three-fold insert which describes all current U. S. missiles and rockets. "Creating the IRBM," by Joseph C. Moquin, Chief of the Management Services Branch, Army's Redstone Ballistic Missile Agency, describes the activities at Redstone. "Aircraft Trial by Sample," by Maj. Edwin J. Rackham, USAF, tells the interesting story of how test pilots evolved a quick system for proving new planes.

SIGNAL (Available Sept. 16, 1957)

"The White Alice Story," by W. E. Burke, vice president for defense products, Western Electric, tells of our vast new communications net in Alaska. "The Golden Era," by Don G. Mitchell, chairman of the board and president of Sylvania, describes the future of the combined fields of photography and electronics. "Electronic Production, Performance and Engineering," by Lt. Gen. C. S. Irvine, Deputy Chief of Staff for Materiel, USAF, outlines new AF approach which has been adopted to give direction to design, development and production efforts of the AF.

NATIONAL AFFAIRS (August 1957)

Life story of Neil McElroy, new Secretary of Defense, carries points on problems to face him in top post. SecDef Wilson, in interview Aug. 15, stated McElroy would not need long to get ready for the job.

Article on radar indicates that Columbia University and ARDC have developed new technique of multiplying effectiveness of radar many hundreds of times through radical system of electronic identification. New method holds promise of providing faster and more accurate early warning information.

DATA: A birthday present from the Postal Department. DATA Magazine has had its application for Second Class mailing privileges approved and entered at the Post Office Washington, D. C. Beginning with this issue, DATA will reach you with the new mail classification which should mean faster, better, surer delivery of DATA to you.

NAVY PILOTS: Navy pilots will get longer tours in line with new USAF policy. Future naval aviators entering the program after Jan. 1, 1958 will face a $3\frac{1}{2}$ year active duty obligation after completion of flight training. Present requirements call for two years after completion of flight training. NAVCAD's will be excluded from new law since their obligated military service is limited to four years by statute. Information released Aug. 27.

RADIATION: The Army announces a new network of radiation detectors being used in tanks, balloons and underground at the Nevada nuclear tests to measure radiation. One type of spotter being used is designed to pop up from the ground in the same manner as a periscope to measure radiation at various distances from the blast. Released Aug. 27.

RADAR TUBE: Increased power, lightness, compactness and versatility in radar sets is expected to result in use of new electron tube, amplatron. Developed by Army and Raytheon of Waltham, Mass., tube works on same principles as ordinary TV and radio tube, but looks a lot different. Weighs ten pounds, can boost energy output of radar basic signal by as much as 8 to 14 times. Makes possible rapid tuning to evade enemy jamming. Can handle power load equal to that needed to light small community. 8/22.

TALOS MISSILE: General Electric has received a large Navy contract for the missile handling system for TALOS. Nearly \$5 million involved, system will be installed in nuclear-powered cruiser LONG BEACH. 8/23.

AIRCRAFT LIGHTS: CAB is having National Bureau of Standards test three new-style aircraft lights. Pending findings, expected to be released this fall, CAB will be better able to evaluate present anticollision lights, doesn't plan any immediate revisions of present CAB rulings. Some present indications point toward decreased use of red lights, amber has better visibility, may prove out over red.

METALLURGY: Senate late in August passed H. J. Res 404 providing for the recognition and endorsement of the second World Metallurgical Congress. Thus both Houses extend official welcome to overseas metal scientists due in U. S. November 2 through 8 and call upon agencies of government to cooperate. Chicago will be host. About 500 visitors from abroad will come, many as representatives of their governments. Clause mentioning visits to major American production centers has been removed from final resolution.

ST. LAWRENCE: Still undecided is whether the Army Corps of Engineers or St. Lawrence Seaway Development Corp. will control the St. Lawrence Seaway project. Possible lower tolls for seaway users if Engineers take over with operating costs being covered in part under the Federal budget.

PATENTS: Col. William R. Blair of N. J., retired Army Signal Corps radar scientist, has at last attained recognition necessarily withheld since 1930 for security reasons. The pulse-echo method of direction finding and ranging was conceived prior to 1930 by Col. Blair and was developed at Ft. Monmouth.

Linda's

OF CONNECTICUT AVENUE

BREAKFAST LUNCH

- 1819 M Street, N.W.
- 1356 Connecticut Ave., N.W.
- 1001 Connecticut Ave., N.W.

CAFETERIAS OF DISTINCTION

Specializing in Prime Roast Beef Sandwiches

I am interested in contacting men who wish to provide themselves with a high monthly income now, and at the same establish themselves in a business that offers virtually an unlimited future. This is in an ethical, dignified sales line, and is not the selling of insurance. The area in which you are now located can be your beginning, or it is possible through this organization, to locate wherever you wish. For details and information, write to: Troy V. Post, Jr., 832 Warner Building, Washington 4, D.C. No obligation on your part of course, and all information will be given by mail.

The Webb Company

WASHINGTON'S LARGEST ENGRAVING PLANT

ENGRAVERS
PRINTERS
STATIONERS

1206 Nineteenth Street, N.W. National 8-5445

WASHINGTON, D. C.



LEON

OFFICE MACHINES CO., INC

TYPEWRITERS
CALCULATORS
ADDING MACHINES

Nationally Famous Makes

• SALES

• RENTALS

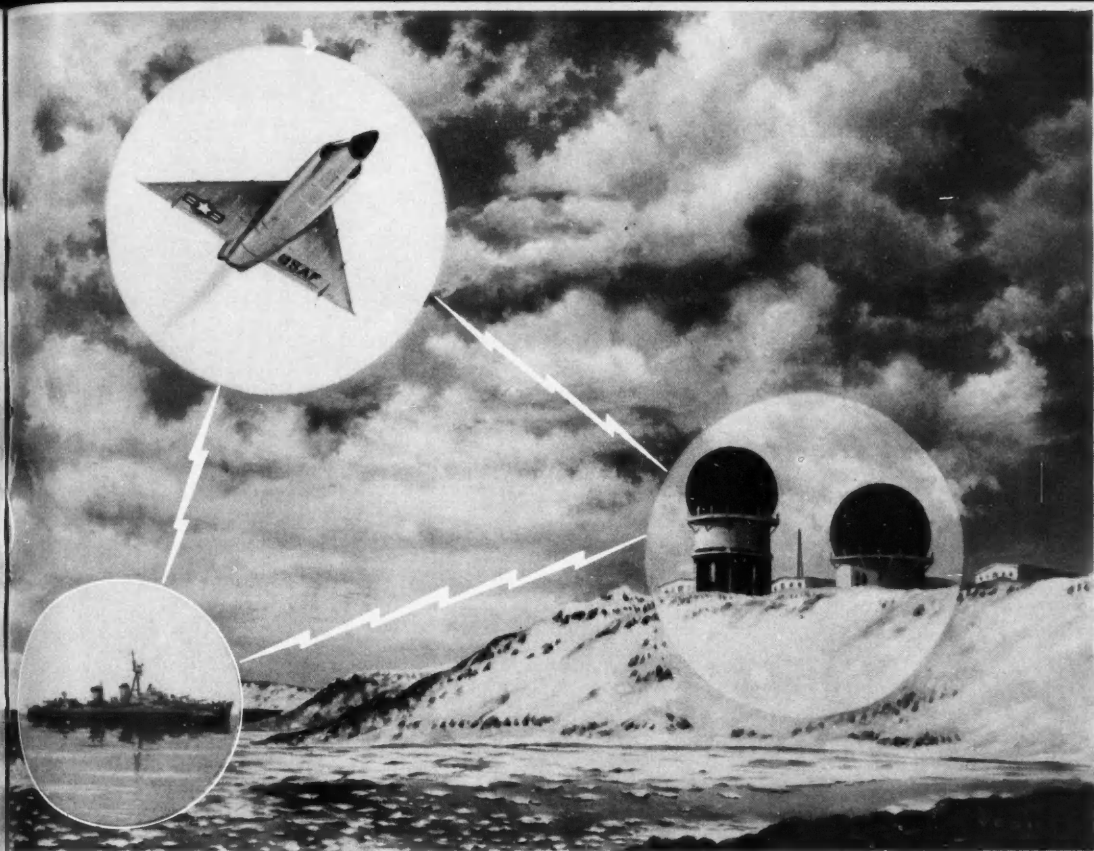
• REPAIRS

Office Supplies

Visit Our Showrooms



1415 K Street, N.W.
Washington, D. C. REpublic 7-3145



Why Air Associates changed its name to

ELECTRONIC COMMUNICATIONS, INC.

Electronic Communications best describes our fastest growing activity: developing and building high-performance electronic control and communications equipment.

Thirty years ago, when Lindbergh flew the Atlantic, "Air Associates" sounded like the ideal name for a pioneer producer for the fledgling aviation industry. It is still a good name, and we use it for our supply division activities with headquarters in Glendale, California.

Today, ECI is concentrating on the many intricate problems of both the military and commercial branches of the aviation industry in missile and rocket control, fire control, aircraft guidance and specialized communication equipment. Our special interest is in sub-systems.

Assured of a brilliant future as a leader of America's

fastest growing industry, the company is building a new factory in St. Petersburg, Fla., with ample room for further expansion. It has leased another plant, and also has under construction a new Research Laboratory near Baltimore, Md.

ECI renders a completely rounded service in its highly specialized fields including Research, Development, Design and Production—all under the most exacting standards of quality control and reliability assurance.

Clients and customers of ECI enjoy the personal attention of the company's management team consisting of some of the nation's outstanding physicists and development engineers.

ECI invites your inquiries.



Electronic Communications, Inc.

ST. PETERSBURG, FLORIDA

Electronic Counter Measures

misguide

the enemy's guided missiles

Admiral develops airborne ECM

You can't count on shooting down a guided missile. The only effective defense against it is some form of Electronic Counter Measures...devices that deceive or destroy enemy missiles short of their targets.

Admiral has taken the lead in furthering the high priority program to develop ECM. Advanced ECM developments now in progress at Admiral will serve many defense purposes. Resulting equipments will be carried by aircraft for protection in hostile territory. At ground installations, ECM will confuse enemy missiles.

Inquiries are invited regarding Admiral's capabilities in ECM and other forms of military electronics.

LOOK TO Admiral FOR

- RESEARCH
- DEVELOPMENT
- PRODUCTION

IN THE FIELDS OF:

MILITARY TELEVISION
COMMUNICATIONS UHF AND VHF
ELECTRONIC COUNTER MEASURES
RADIAC • RADAR • TELEMETERING
DISTANCE MEASURING
RADAR BEACONS AND IFF
CODERS & DECODERS
MISSILE GUIDANCE
CONSTANT DELAY LINES
TEST EQUIPMENT

ENGINEERS. The wide scope of work in progress at Admiral creates challenging opportunities in the field of your choice. Write Director of Engineering and Research, Admiral Corporation, Chicago 47, Illinois.

Admiral.

CORPORATION
CHICAGO 47, ILLINOIS

GOVERNMENT LABORATORIES DIVISION

Historic Library
302 E. Buchtel Ave.
Akron 4, Ohio

data

Dupont Circle Building
1346 Connecticut Ave.
Washington 6, D. C.

gram ✓
55
GOVERNMENT RESEARCH AND DEVELOPMENT

15 September 1957

HUDSON 3-9450

469. ATOMIC INSURANCE:

A new order from the Atomic Energy Commission directs nuclear power operators to take out insurance against reactor accidents at the rate of \$150,000 per thousand kilowatts of thermal energy.

DATA would like to quote from the October 1956 issue of our magazine wherein we stated, "With commercial industry operating nuclear powered equipment, what legal recourse does a worker or other victim have in the event of accidental radiation? . . . Rights of all concerned where exposure to ionizing radiation is emitted or negligently administered must be determined. Jurisdictional responsibilities of Federal and State Governments in atomic health and safety must be established or atomic industry will cause grave social problems, fear in the minds of residents and workers, and slow rather than rapid expansion of diversified atomic industry."

DATA, in October 1956, went on to state, "If the effects of radiation at his place of employment do not visually effect the worker but cause him to have a genetically deformed child, can he sue his employer? If many years later radiation at an earlier date is shown to be the cause of leukemia, cataract, or skin cancer, does the worker have legal rights to compensation? If apprehension and mental distress at pregnancy because of the fear of irradiated genetic change - whether real or imagined - cause the mother to have difficulties or lose her child, does she have legal recourse?"

"It looks as though the Federal Government will be firmly entrenched in the atomic power business for a long time after all the secrets are no longer secrets. . . main reason will be to protect the worker, to make sure that atomic energy is placed in competent hands so that employees will be protected as much as possible from over-dose accidents.

"The Government may also find it necessary to enter the employee's insurance picture, since without some plan or proviso from Federal aid, the atomic worker's insurance rates may rise significantly."

It is interesting to note the recent action of the AEC in this light.

470. SPERRY GETS \$47 MILLION FOR TALOS GUIDANCE:

TALOS, the Navy's long-range surface-to-air missile, will be guided by SPG-49 TALOS missile radars capable of picking up targets many miles beyond the horizon. TALOS will be major armament on the cruisers GALVESTON, LITTLE ROCK, and OKLAHOMA CITY, presently undergoing conversion to guided missile cruisers.

Sperry Gyroscope's new contract for \$47,000,000 for TALOS guidance gear was announced by the Navy Sept. 10. Sperry had previously received contracts totaling \$52,000,000 for SPQ-5 TERRIER missile guidance systems.

Included in a long-secret class of super-radars developed for the Navy, both the TALOS and TERRIER missile guidance systems use antennas that resemble gigantic searchlights. The systems provide exceptionally high performance for stable guidance of supersonic missiles.

///Pentagon OPI 0910/

471. FIRST ROCKET-POWERED DRONE HAS FLIGHT:

The Nation's first successful rocket-powered target drone, Temco Aircraft's XKDT-1, has made its initial flight at the Navy's Point Mugu, Calif. NavAir Test Center, the Navy announced Sept. 6.

The XKDT-1 is about 12 feet long, wing span of 58.8 inches, and a body diameter of 10 inches. Speed is sonic. Ceiling is 50,000 feet. The target drone is aircraft launched.

///Pentagon OPI 0906/

472. NAVY COMPLETES 57-FOOT PLASTIC MINESWEEPER:

The need for a redetermination of size limitations and methods of construction previously held as practical limits for plastic craft is the evident conclusion to be drawn from a three-page article in the current September BuShips Journal which traces the construction and evaluation of the 57-foot monolithic hull - the largest ever made of plastic. In the article by K. B. Spaulding of the BuShips Boats and Small Craft Section, there appears to be an indication, at least on the part of the author, to expect the Navy to build even larger plastic hulls, as the article states in conclusion, "...the design appears to be more than adequate and should provide guidance to designers of larger plastic vessels."

Hull number of the new plastic minesweep is EX-MSB-23.

///BuShips Journal 09-2/

DATA RECEIVES WRITE-UP IN SEPT. 9TH ADVERTISING AGE:

Turn to page 21 of the Sept. 9th issue of Advertising Age. There is a story about us.

0'

s.

co

,

e

6/

of

t

on

e

n,

s

2/

e

In

10